DOOSAN

Optimal Solutions for the Future

VM series

Large, High-speed, High-precision Machining Center

VM series

VM 750 (L)
VM 960 (L)
VM 1260

ver. EN 151015 SU

VM series

Vertical Machining Center Ideal for Mold Processing

Low-vibration built-in spindle and highest stroke in its class. Designed for both roughing and finishing, the VM Series provides a product line-up ranging from Unit 7 to Unit 12 sizes. The new design boasting improved operator convenience and work efficiency will raise users' productivity and create added value.

Contents

Broad product line-up designed for diverse requirements

Complete line-up ranging from Unit #7 to #12 sizes.

- VM 750 (L) / VM 960 (L) / VM 1260

Highest reliability realized with a wide range of spindle speeds and excellent quality

- Dual contact spindle (standard)
- Gear type 6000 rpm / 8000 rpm
- Built-in type 12000 rpm

Control solution for processing high-quality molds

- High-speed, high-precision contour control
- Tool monitoring
- Optimal feed control

Basic Structure

High feedrate and precision have been realized with the adoption of a stable C-type column structure and bed design.

Rigid Construction for Heavy Duty Applications

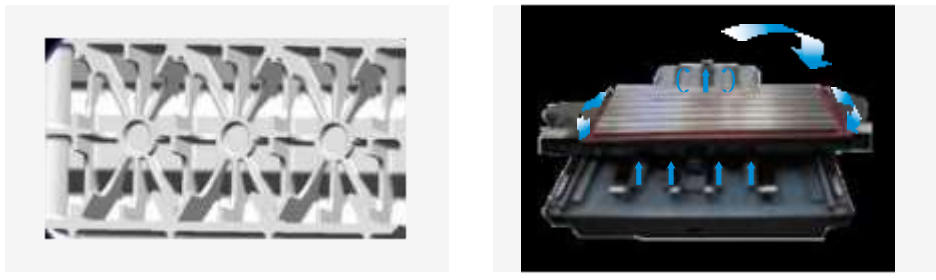
- The rigidity is increased by effectively arranging the box type structure of bed, column and saddle.
- Rigidity and stability are assured with the wide box guide structure.
- The spindle head is supported by the wide guide way for the stable cutting performance.
- Wide z-side slide and wide y-side transport support prevent skewing and make it suitable for powerful, heavy cutting.

Exceptionally Durable All-in-One Single Frame Construction

The wide bed slide is heat-treated with high frequency providing outstanding performance during heavy duty cutting operations.

Radial Rib Structure

The processing is improved with the reduced weight and absorbed vibrations during heavy duty cutting.



Coolant Recirculation System

The cleanliness and service life of the coolant have been improved.

Feed Shaft / Tool Magazine

Equipped with wide box-type guideways and a large-capacity tool changer.

Rapid Traverse

The adoption of a wide box guide structure delivers greater rigidity and stability. The entire upper surface of the saddle is equipped with slide bearings and oil grooves to prevent friction and wear.

Rapid traverse rate

VM 750 (L)	20 / 20 / 20 m/min	(787.4 / 787.4 / 787.4 ipm)
VM 960 (L)	16 / 16 / 16 m/min	(629.9 / 629.9 / 629.9 ipm)
VM 1260	12 / 12 / 12 m/min	(472.4 / 472.4 / 472.4 ipm)

Rapid traverse rate

Large diameter ball screw for powerful cutting

Fitted with high-precision, fixed ends, pre-tensioned double anchor structure ball screw. The nut is cooled on the outer rim to minimize thermal error, while direct-coupled structure delivers rapid responsiveness an

Minimized Idle Time

A high-speed cam-type tool changer has been adopted as a standard feature to deliver higher productivity. The loop-type magazine on the left side of the machine stores 40 tools as standard, and can be extended.

Minimized Idle Time

ool change time (T-T-T)

2.5sec.

Tool magazine

VM 750 (L) / VM 960 (L)

30sec. standard

40sec. option

VM 1260 40sec. standard

Basic type and long type table specifications are available in addition to diverse machining solutions.

Table

The extended X axis travel distance allows the setting up and cutting of wider workpieces of various shapes.

Largest work area in its class

X-axis x Y-axis

VM 750 (L)

1600 x 800 (1900 x 800)mm

(63.0 x 31.5 (74.8 x 31.5) inch)

VM 960 (L)

2400 x 950 (2600 x 950)mm

(94.5 x 37.4 (102.4 x 37.4) inch)

VM 1260

2800 x 1260mm

(110.2 x 49.6 inch)

Greatest table loading capacity in its class

VM 750 (L)

3000 (3500) kg

(6613.8 (7716.1) lb)

VM 960 (L)

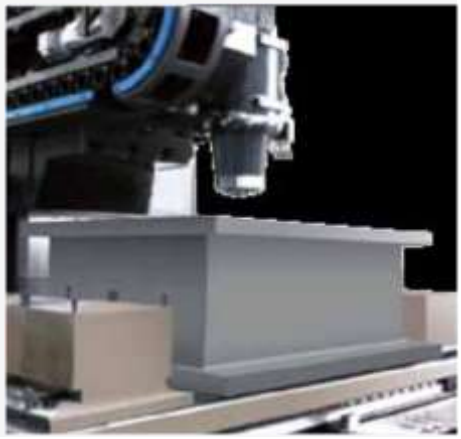
4000 (4500) kg

(8818.4 (9920.7) lb)

VM 1260

8000kg

(17636.7 lb)



Spindle

The stable thermal-displacement-preventive structure minimizes spindle taper error at high speed. The wide range of speeds and excellent quality of the spindle guarantee the highest reliability.

Gear Type

- Powerful cutting of large workpieces: Powerful processing capability of large workpieces with maximum torque is offered by 2-stage gear drive.
- High-speed tapping: Standard adoption of rigid tap allows high speed tapping without the tap holder.
- High rigidity and stability: Rigid angular contact bearing is adopted to assure rigidity and stability by maintaining the rigidity even during heavy duty cutting.

Max. spindle speed **6000 r/min** 8000 r/min option

Motor (30 min/cont.)

VM750 (L), VM 960 (L)

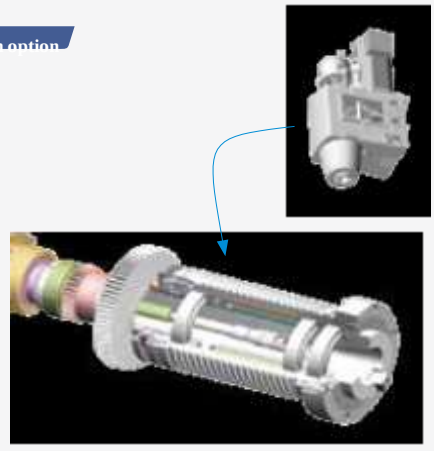
18.5 / 15kW

(24.8 / 20.1 Hp)

VM 1260

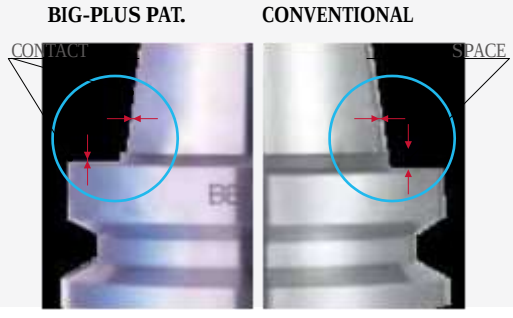
22 / 18.5kW

(29.5 / 24.8 Hp)



Dual contact spindle

Dual contact spindle (BIG PLUS) adopted as a standard feature

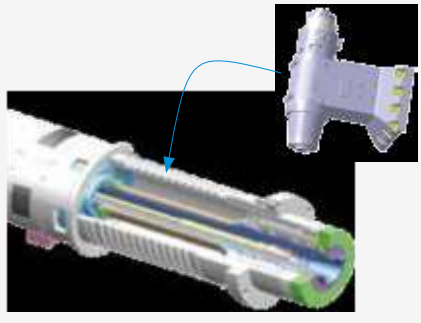


Built-in Type option

Max. spindle speed **12000 r/min**

Motor (30 min/cont.) **30 / 25 kW**

(40.2 / 33.5 Hp)

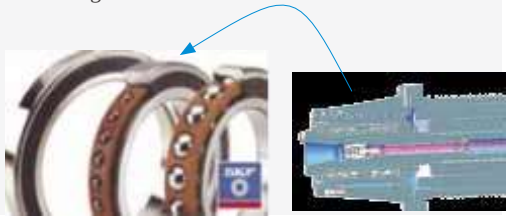


- **Rigid and precise spindle**

  Adoption of 100 diameter rigid ceramic bearing and oil supply (oil mist) method assure high precision even during the extended time of high speed rotation.

- **Highest speed spindle in its class**

  Adoption of low vibration built-in motor offers optimum molding with the highest spindle speed (12000 r/min) and the highest torque of 419.44 N·m (309.5 ft-lb) in its class.



Cutting Performance

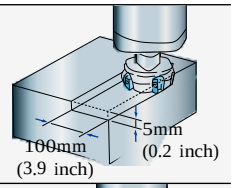
Provides high-productivity and high-accuracy in a variety of machining operations.

VM 1260 [12000 r/min]

Face mill Carbon steel (SM45C)

ø125mm (4.9 inch) Face mill (8Z)

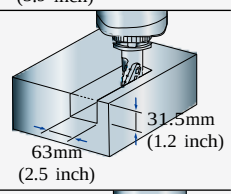
Machining rate cm³/min (inch³/min)	Spindle speed r/min	Feedrate mm/min (ipm)
660 (40.3)	500	1660 (65.4)



End mill Carbon steel (SM45C)

ø63mm (2.5 inch) Endmill (4Z)

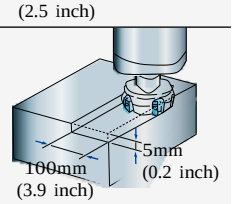
Machining rate cm³/min (inch³/min)	Spindle speed r/min	Feedrate mm/min (ipm)
635 (38.8)	500	320 (12.6)



Face mill Gray casting (GC25)

ø125mm (4.9 inch) Face mill (8Z)

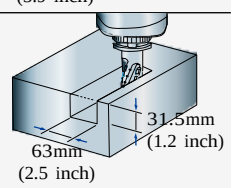
Machining rate cm³/min (inch³/min)	Spindle speed r/min	Feedrate mm/min (ipm)
1260 (76.9)	500	2520 (99.2)



End mill Gray casting (GC25)

ø63mm (2.5 inch) Endmill (4Z)

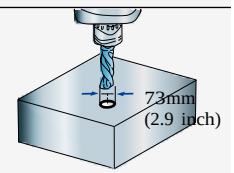
Machining rate cm³/min (inch³/min)	Spindle speed r/min	Feedrate mm/min (ipm)
1012 (61.8)	500	320 (12.6)



Drill Carbon steel (SM45C)

ø73mm (2.9 inch) Drill (2Z)

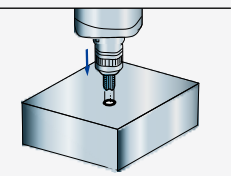
Spindle speed r/min	Feedrate mm/min (ipm)
500	140 (5.5)



Tap Carbon steel (SM45C)

ø73mm (2.9 inch) Drill (2Z)

Tool	Spindle speed r/min
M42 x P4.5	400



~The results, indicated in this catalogue are provides as example. They may not be obtained due to differences in cutting conditions and environmental conditions during measurement.

Machining Accuracy

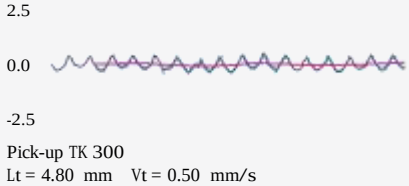
Roundness

8.2 µm

Model	VM 750 (L) / 960 (L) / 1260
Material	Al6061
Tool	ø10mm (0.4 inch) (Endmill : 3Z)

Roughness

P R̂ R R̂ W R̂ Profile leveled Filter
ISO 11562 (M1)
Lc / Ls = 300 Lc = 0.800 mm



Ra 0.22 µm

Spindle Speed	6000 r/min
Feedrate	900 mm/min (35.4 ipm)

~The results, indicated in this catalogue are provides as example. They may not be obtained due to differences in cutting conditions and environmental conditions during measurement.

Standard / Optional Specifications

Various options are available to satisfy various requirements.

≋ Standard ≈ Optional X N/A

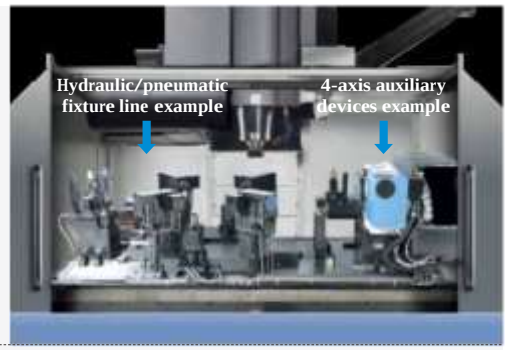
NO.	Description	Features	VM750 (L)	VM 960 (L)	VM 1260
1	Spindle motor power	18.5/15 KW	≋	≋	X
2		22/18.5 KW	≈	≈	≋
3		26/22 KW	≈	≈	≈
4		30/25 KW	≈	≈	≈
5	Spindle speed	6000 RPM	≋	≋	≋
6		8000 RPM	≈	≈	≈
7		12000 RPM	≈	≈	≈
8	ATC	30 TOOLS	≋	≋	X
9		40 TOOLS	≈	≈	≋
10	Linear scale	INCREMENTAL	≈	≈	≈
11		ABSOLUTE	≈	≈	≈
12	SPLASH GUARD	REAR COVER & CHIP COVER ON THE TABLE	≋	≋	X
13		FULL ENCLOSED SPLASH GUARD WITHOUT TOP COVER	≈	≈	≋
14		FULL ENCLOSED SPLASH GUARD WITH TOP COVER	≈	≈	≈
15	Coolant tank		≋	≋	≋
16	Coolant pump		≋	≋	≋
17	TSC	1.5 KW_2.0 MPA_BAG FILTER	≈	≈	≈
18		1.5 KW_2.0 MPA_CYCLON FILTER	≈	≈	≈
19		5.5 KW_7.0 MPA_DUAL BAG FILTER	≈	≈	≈
20	OIL SKIMMER	BELT TYPE	≈	≈	≈
21	Coolant gun		≈	≈	≈
22	Air gun		≈	≈	≈
23	Air blower		≋	≋	≋
24	Auto work measuring device		≈	≈	≈
25			≈	≈	≈
26	Master tool for auto tool measurement MASTER TOOL		≈	≈	≈
27	Auto tool measuring device		≈	≈	≈
28	Test bar		≈	≈	≈
29	CNC	FANUC 31iB	≋	≋	≋
30	NC screen size	10.4 INCH (COLOR)	≋	≋	≋
31			≈	≈	≈
32	Gravity shaft fall prevention system (at power failure)		≈	≈	≈
33	Transformer		≈	≈	≈
34	Power panel air conditioner		≈	≈	≈
35	Power panel light		≈	≈	≈
36	Power panel line filter		≈	≈	≈
37	Auto NC power off		≋	≋	≋
38	Easy Operation Package	Tool management system	≋	≋	≋
39		Alarm / M-code / G-code / ATC restoration guidance	≋	≋	≋
40		Table movement / Guidance on work coordinate system setup	≋	≋	≋
41	MPG	1 MPG_PORTABLE TYPE	≈	≈	≈
42		1 MPG_DISPLAY TYPE	≈	≈	≈
43		3 MPG_PORTABLE TYPE	≈	≋	≋
44		3 MPG_STAND TYPE	≋	≈	≈
45	DSQ (high speed / high precision contour control)	DSQ1 (AICC II_200 BLOCKS)	≋	≋	≋
46		DSQ2 (DSQ1 & DATA SERVER 1GB)	≈	≈	≈
47		DSQ3 (DSQ2 & 600 BLOCKS)	≈	≈	≈
48		DSQ4 (DSQ3 & 1000 BLOCKS)	≈	≈	≈
49	DAFC (Doosan Adaptive Feedrate Control)		≈	≈	≈
50	DTMM (Doosan Tool load Monitoring for Machining Centers)		≈	≈	≈
51	DSTC (Doosan Smart Thermal Control)		≋	≋	≋
52	Counter function	WORK / TOTAL / DAILY	≈	≈	≈

〰 Please contact Doosan for more information.

Options

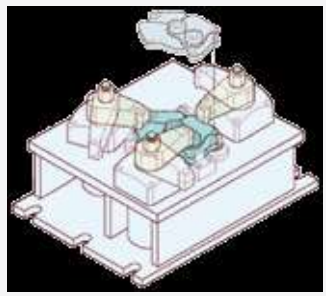
Interface for Additional Axis

- Recommended rotary table size
  : VM 750 (L) : ø320 mm /
  VM 960 (L) : ø500 mm
  VM 1260 : ø500 mm
- Please check the driving system (hydraulic or pneumatic) of the rotary table before ordering the machine.



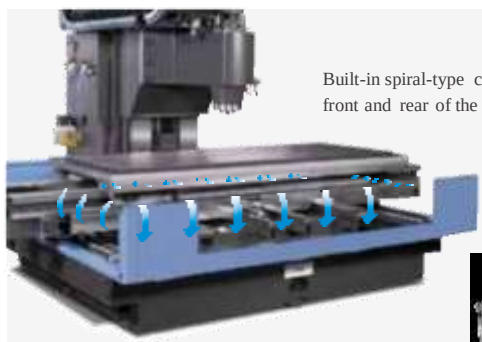
Fixture check list (for hydraulic / pneumatic fixtures)

- Pressure source
  Hydraulic ☐ P/T ☐ A/B
  Pneumatic ☐ P/T ☐ A/B
- Number of ports
  ☐ 1pair (2-PT 3/8"port) ☐ 2pair (4-PT 3/8"port)
  ☐ 3pair (6-PT 3/8"port)
- Hydraulic power unit
  Supply scope : ☐ End user ☐ DOOSAN
  ☐ Doosan standard unit 24L / min, 4.9 MPa
  ☐ Other requirements _____L / min, _____MPa



~ Please contact Doosan for more information.

Easy Chip Disposal



Built-in spiral-type coil conveyor at front and rear of the machine

Lift chip conveyor for fast chip disposal (VM 1260)

Diverse Options

Numerous options are offered for greater efficiency and customer convenience.

Coolant Gun option

Coolant gun helps keeping the work environment clean.

Through-spindle coolant spray system

Oil skimmer

Optimized Tool Processing Solution

Superior surface finishes and machining accuracy are achieved through using standard processing solutions such as high-speed / high-precision contour control and thermal displacement compensation.

High Speed / High Precision Contour Control

~DSQ : Doosan Super Quality

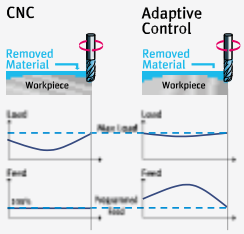
- **DSQ1**
  (AICC2 _ 200 Block + Machining condition selection function)
- **DSQ2** option
  (DSQ1 + Data server [1GB])
- **DSQ3** option
  (DSQ2 + High speed processing _ 600 Block)

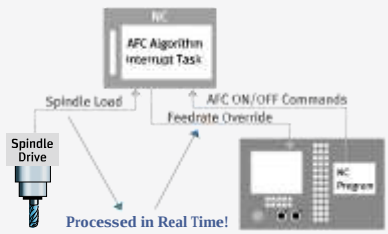
Specimen tested : VASE

The Optimal Feed Control option

~DAFC : Doosan Adaptive Feedrate Control

Optimal feed control is ensured by real-time spindle load detection.

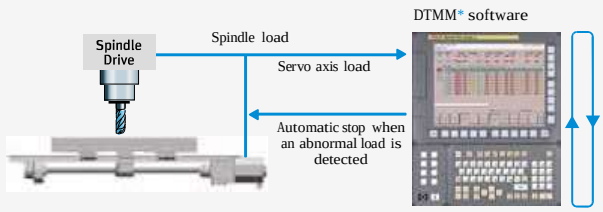




Tool Load Monitoring System (DTMM*) option

~DTMM : Doosan Tool load Monitoring for Machining Centers

The technology of protecting tool and machine in abnormal load during the cutting process



- Detection cycle = Program interpolation cycle
- Automatic stop when an abnormal load is detected
- Select an alternative tool and command to NC

Smart thermal displacement multi compensation technology

~DSTC : Doosan Smart Thermal Control

Realizes high-quality, high-precision machining with smoothing thermal displacement compensation of the spindle and structure.

Compensation of static displacement of spindle

Compensates changes in tool position caused by expansion of the spindle shaft at high speed.

Structure thermal displacement compensation

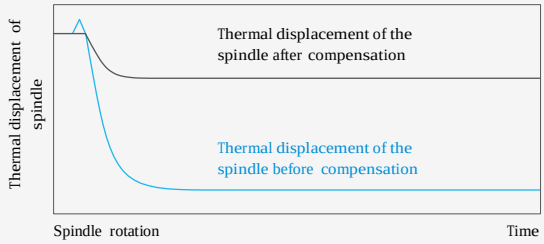
Compensates irregular deflection or expansion of the structure due to ambient temperature using a multiple temperature sensors.

Compensation of structure thermal displacement

Thermal error of the spindle caused by heat accumulation is compensated with 5 algorithms including a smoothing function.

Without smoothing

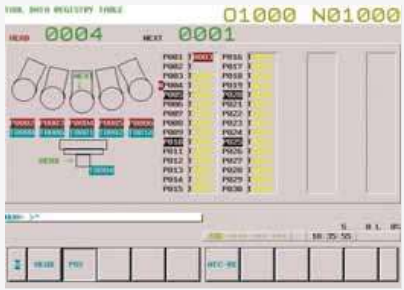
With smoothing



Easy Operation Package

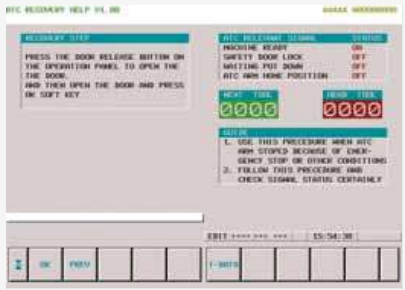
Operation / Maintenance

These Doosan software packages have been customized to provide fast and easy setup of tooling, workpiece, and program. These functions minimize the idle time caused by process setup and maximize the machine's productivity.



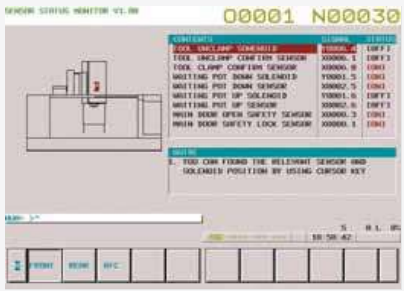
Tool Data Registry Table

Displays the information on the tools in the pot in 2D graphics.



Sensor Status Monitor

Shows solenoid valve and sensor status without the electric diagram.

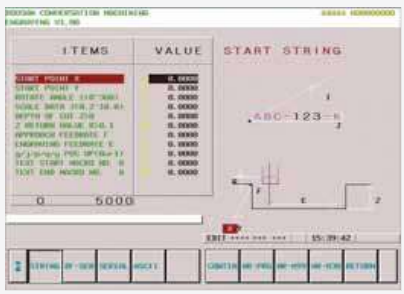


Engraving option

Allows character engraving on the workpiece.

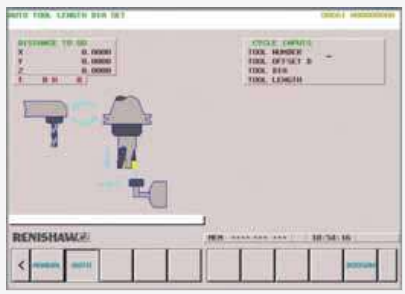
Pattern Cycle

Pattern cycle programs can be created using an interactive way of parameter input.



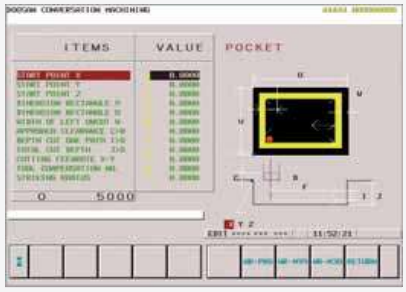
ATC Recovery Help

When ATC is stopped (malfunction or emergency), this function guides the operator to recover the machine back to its normal state.



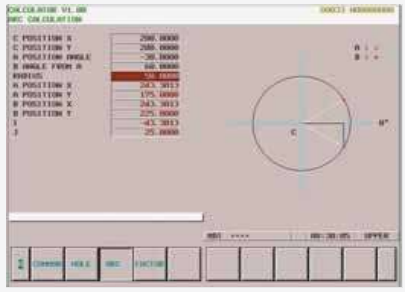
Tool Load Monitor option

Detects tool damage and wear by setting limits on the load for spindle and axis to minimize mechanical damages.



Renishaw Gui (Tool measure) (Work measure option)

Enables automatic measurement of tool length, tool diameter, and work coordinates, and detects tool damage using an interactive method.



Calculator

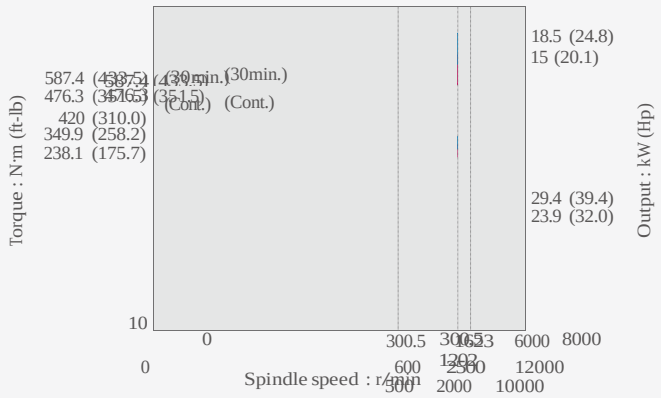
Provides all functions of a general calculator plus automatic calculation of cutting size and conditions.

Spindle Power – Torque Diagram

Gear Type

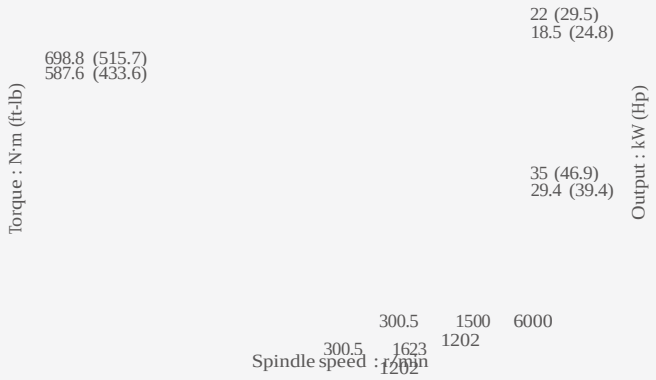
VM 750 (L), VM 960 (L)

Max. spindle speed : 6000 r/min
Spindle motor : 18.5 / 15 kW (30min./ Cont.)



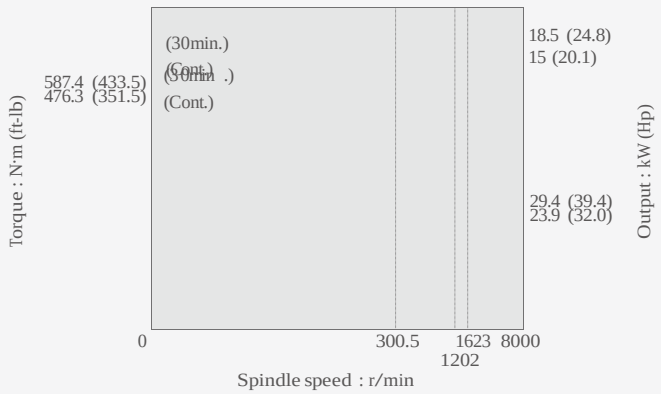
VM 1260

Max. spindle speed : 6000 r/min
Spindle motor : 22 / 18.5 kW (30min./Cont)



VM 750 (L), VM 960 (L), VM 1260 option

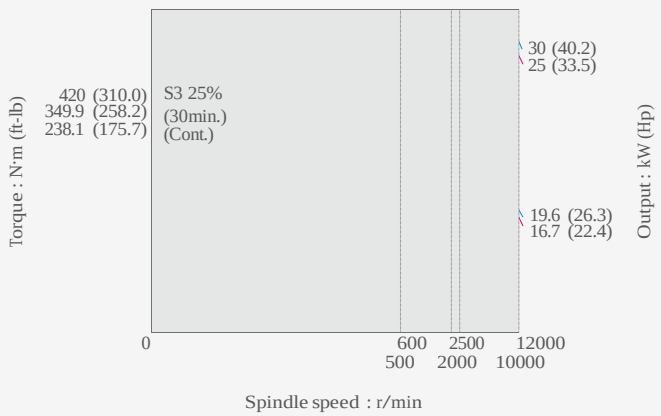
Max. spindle speed : 8000 r/min
Spindle motor : 18.5 / 15 kW (30min./ Cont.)



Built-in Type

VM 750 (L), VM 960 (L), VM 1260 option

Max. spindle speed : 12000 r/min
Spindle motor : 30 / 25 kW (30min./ Cont.)



18.5 (24.8)

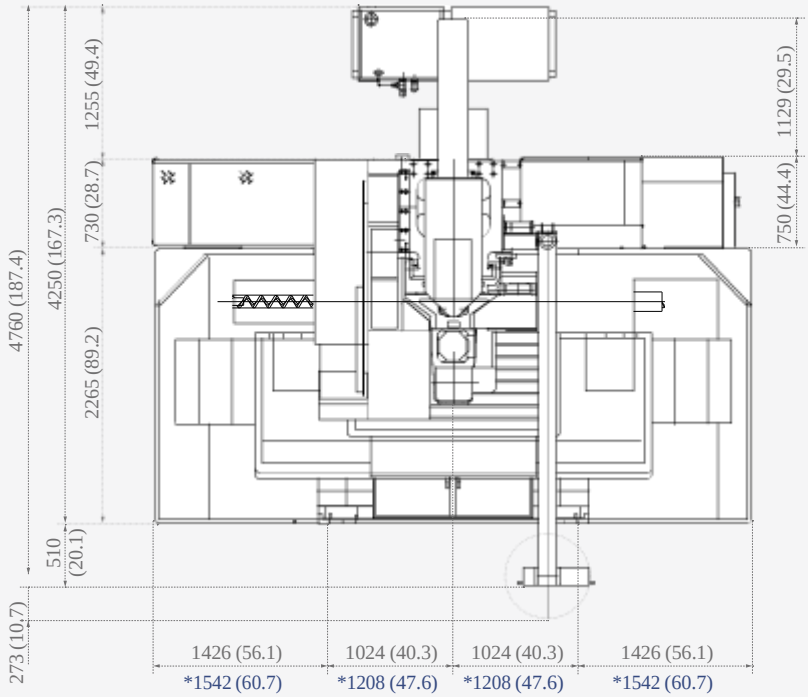
22 (29.5)

External Dimensions

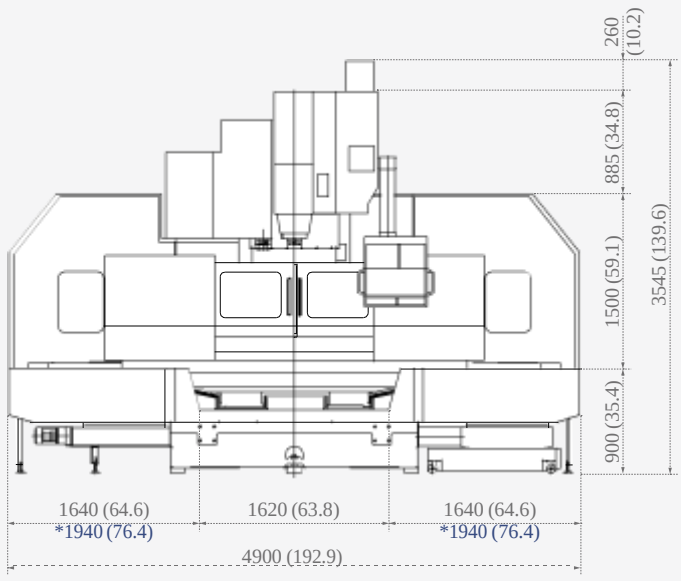
VM 750 / 750L (Half Cover, for domestic market)

Unit: mm (inch)

Top View



Front View



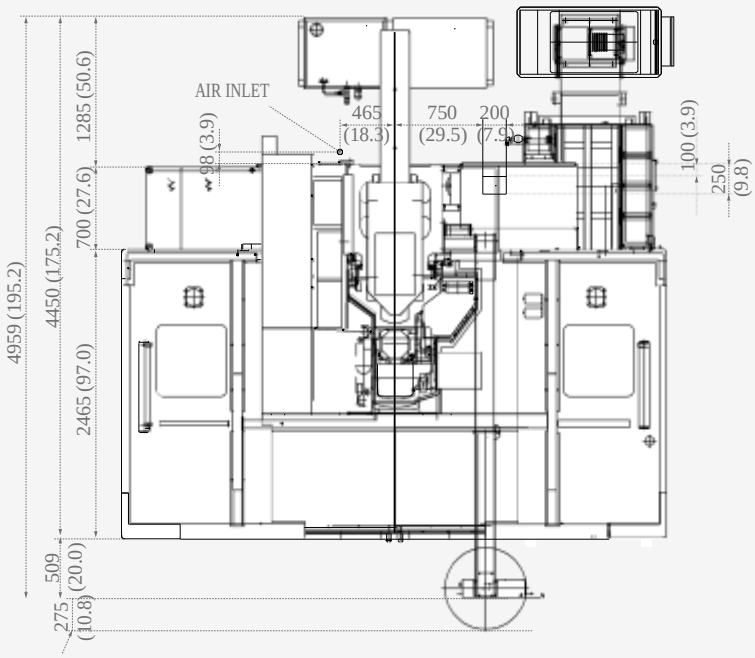
*: VM 750L

External Dimensions

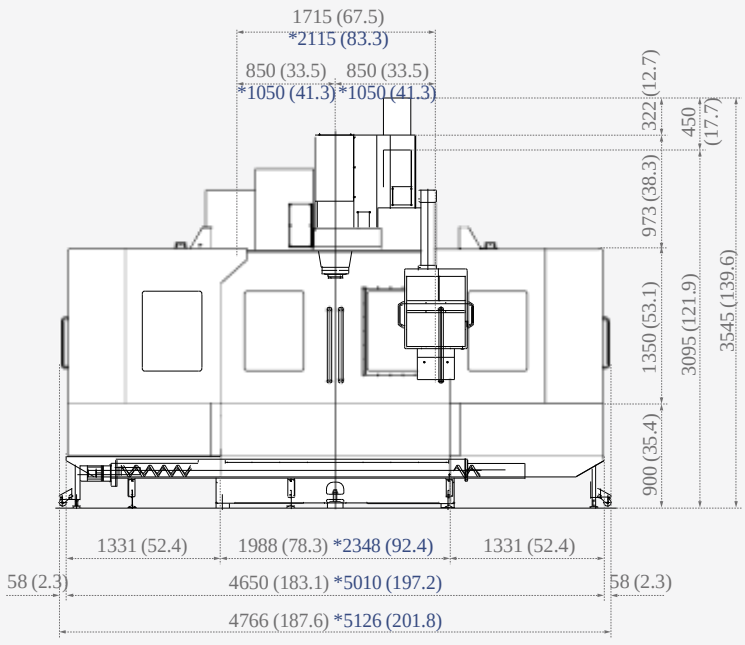
VM 750 / 750L (Full Cover) option

Unit: mm (inch)

Top View



Front View



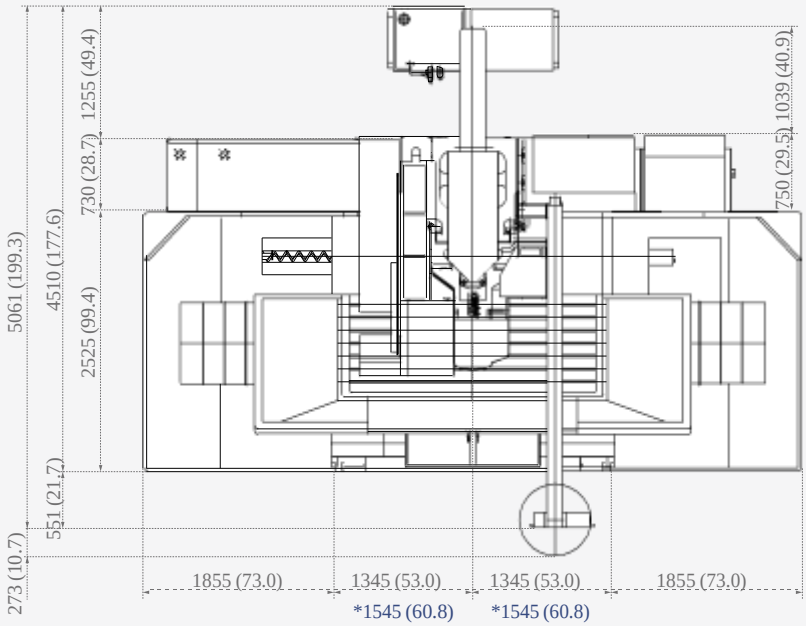
* : VM 750L

External Dimensions

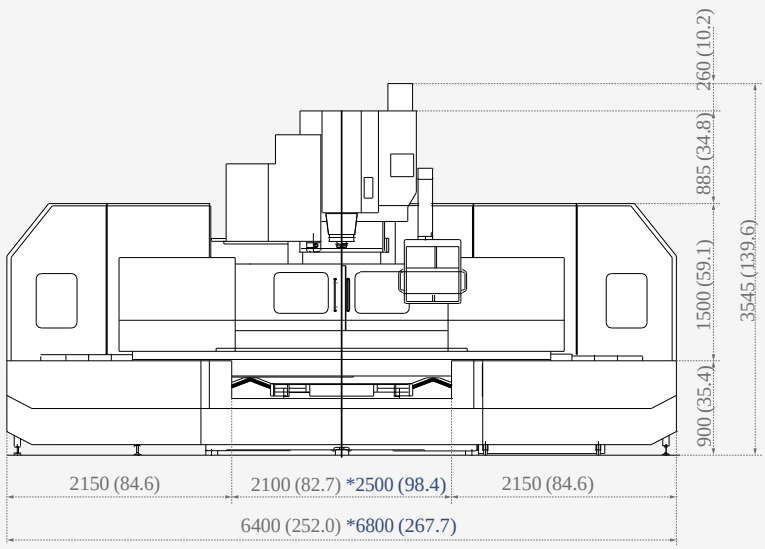
VM 960 / 960L (Half Cover, for domestic market)

Unit: mm (inch)

Top View



Front View



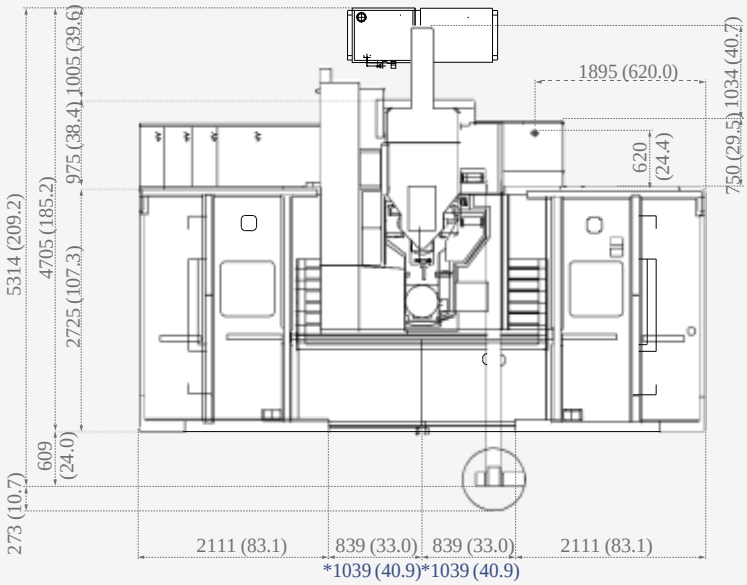
* : VM 960L

External Dimensions

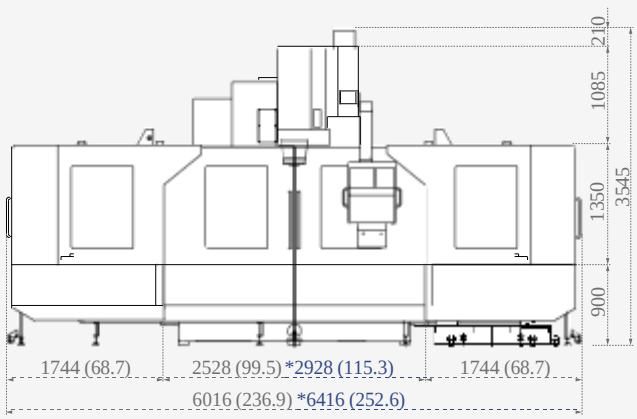
VM 960 / 960L (Full Cover) option

Unit: mm (inch)

Top View



Front View



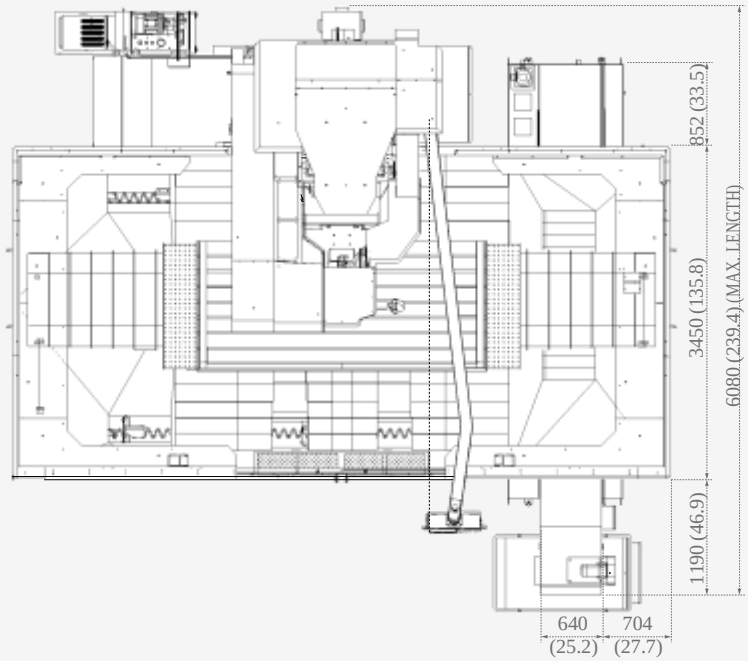
* : VM 960L

External Dimensions

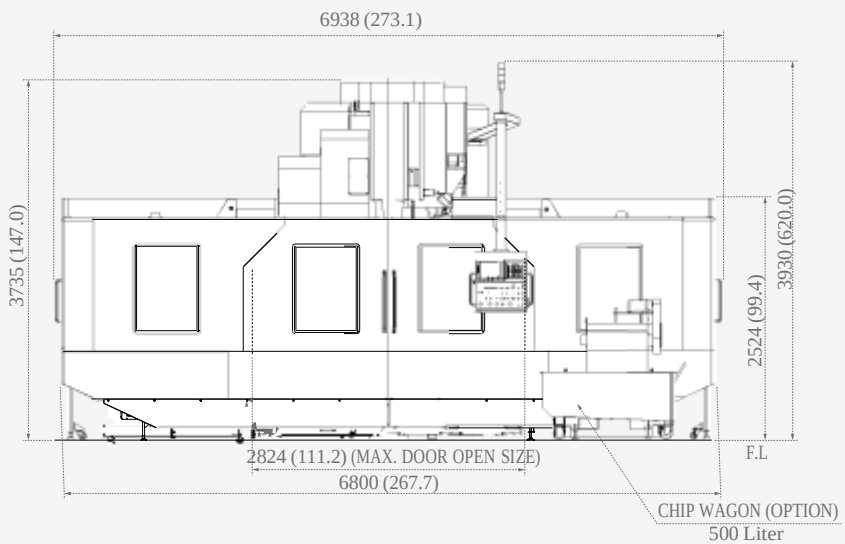
VM 1260 (Full Cover)

Unit: mm (inch)

Top View



Front View

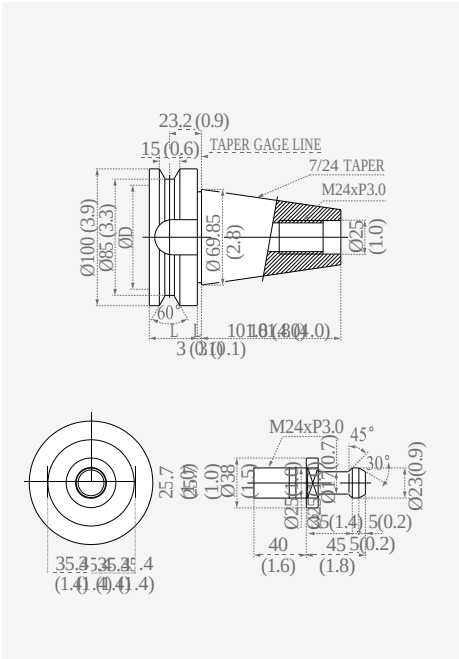


Machine Specifications

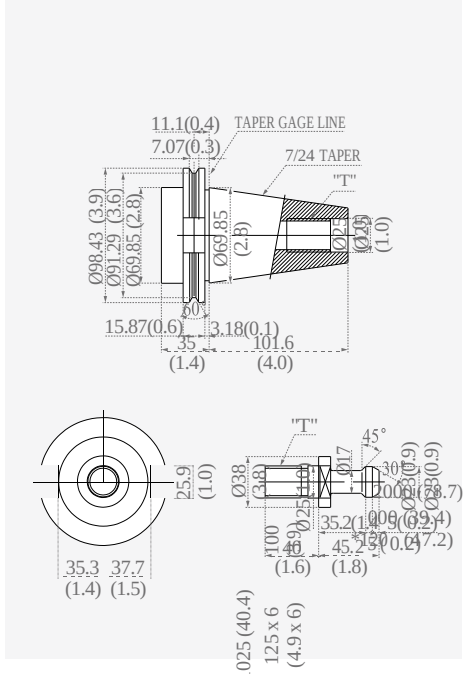
Tool Shank

Unit: mm (inch)

BT 50



CAT 50



DIN 50

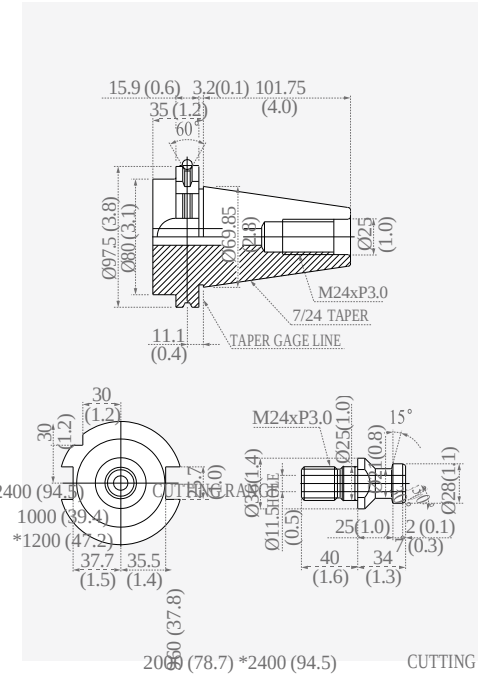
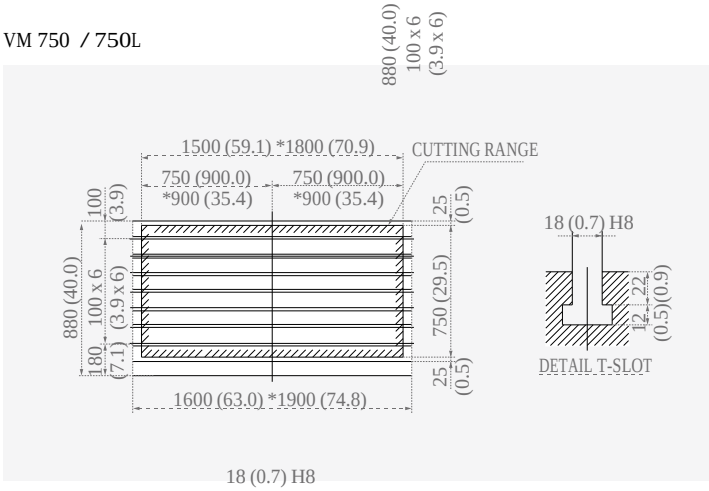


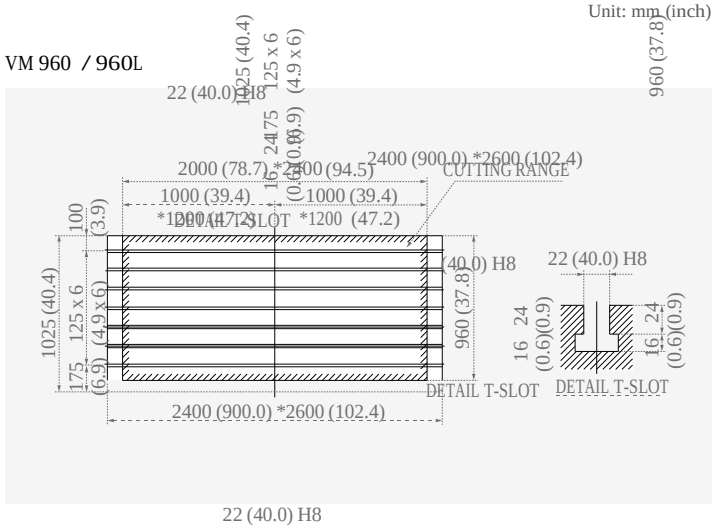
Table (for both half & full cover types)

Unit: mm (inch)

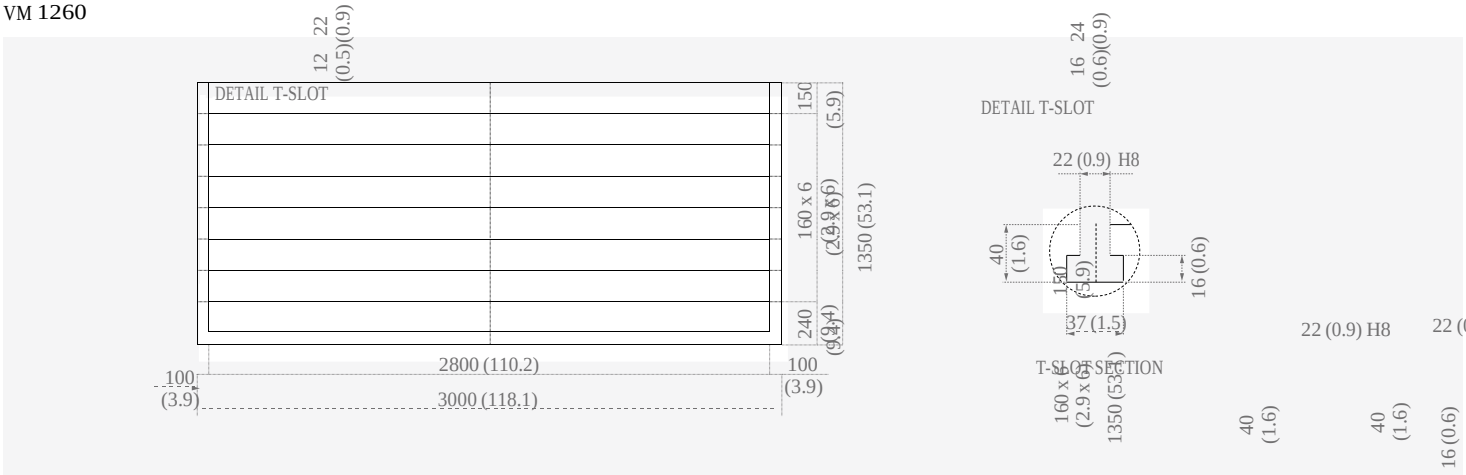
VM 750 / 750L



VM 960 / 960L



VM 1260



Tool Shank / Table

Machine Specifications

Description		Unit	VM750	VM 750L	VM 960	VM 960L	VM 1260
Travel	X-axis	mm (inch)	1500 (59.1)	1800 (70.9)	2000 (78.7)	2400 (94.5)	2500 (98.4)
	Y-axis	mm (inch)	750 (29.5)		960 (37.8)		1260 (49.6)
	Z-axis	mm (inch)	800 (31.5)				900 (35.4)
	Distance from spindle nose to table top	mm (inch)	200 - 1000 (7.9 - 39.4)				200 - 1100 (7.9 - 43.3)
	Distance from spindle nose to column	mm (inch)	865 (34.1)		1005 (39.6)		1320 (52.0)
Feedrate	Rapid feedrate (X, Y, Z)	m/min (ipm)	20 / 20 / 20 (787.4 / 787.4 / 787.4)		16 / 16 / 16 (629.9 / 629.9 / 629.9)		12 / 12 / 12 (472.4 / 472.4 / 472.4)
	Cutting feedrate	mm/min (ipm)	10000		8000		6000
Table	Table size	mm (inch)	1600 x 800 (63.0 x 31.5)	1900 x 800 (74.8 x 31.5)	2400 x 950 (94.5 x 37.4)	2600 x 950 (102.4 x 37.4)	2800 x 1260 (110.2 x 49.6)
	Loading capacity	kg (lb)	3000	3500	4000	4500	8000
Spindle	Max. spindle speed	r/min	6000 {8000, 12000}*				
	Taper		ISO#50 7/24 Taper				
	Max. torque	N·m (ft-lb)	587.6 {698.8, 793.8}*, {420}*				698.8 {793.8}*, {420}*
ATC	Type of tool shank		BIG PLUS MAS403 BT50				
	Tool storage capacity	ea	30 {40}*				40
	Max. tool diameter	mm (inch)	ø125 (ø4.9)				
	Max. tool dia. (when a nearest port is empty)	mm (inch)	ø230 (ø9.1)				
	Max. tool length	mm (inch)	350 (13.8)				
	Max. tool weight	kg (lb)	15 (33.1)				
	Tool selection type		Memory Random				
	Tool change time (tool to tool)	s	2.5				
	Tool change time (chip to chip)	s	6		8		
Motor	Spindle motor power (30 min)	kW (Hp)	18.5 / 15 {22 / 18.5, 30 / 25}* (24.8 / 20.1 {29.5 / 24.8, 40.2 / 33.5}*)				22 / 18.5 {18.5 / 15, 30 / 25}* (29.5 / 24.8 {24.8 / 20.1, 40.2 / 33.5}*)
	Travel motor (X / Y / Z)	kW (Hp)	7 / 7 / 7 (9.4 / 9.4 / 9.4)				9 / 9 / 7 (12.1 / 12.1 / 9.4)
Power Consumption	Electric power	kVA	60 {70}*				65 {73}*
	Compressed air pressure	Mpa (psi)	0.54 (78.3)				
Tank Capacity	Coolant tank capacity	L	480		520		800
	Lubricant tank capacity	L	12				
Control	Height (H)	mm (inch)	3545 (139.6)				3930 (154.7)
	Dimension (L x W)	mm (inch)	4927 x 4900 {5126 x 4766}* (194.0 x 192.9 {201.8 x 187.6}*)	4927 x 5500 {5126 x 5126}* (194.0 x 216.5 {201.8 x 201.8}*)	5138 x 6400 {5392 x 6016}* (202.3 x 252.0 {212.3 x 236.9}*)	5138 x 6800 {5392 x 6416}* (202.3 x 267.7 {212.3 x 252.6}*)	5645 x 6938 (222.2 x 273.1)
	Weight	kg (lb)	14000 (30864.3)	14800 (32627.9)	20000 (44091.8)	21000 (46296.4)	31000 (68342.3)

* { } : Option

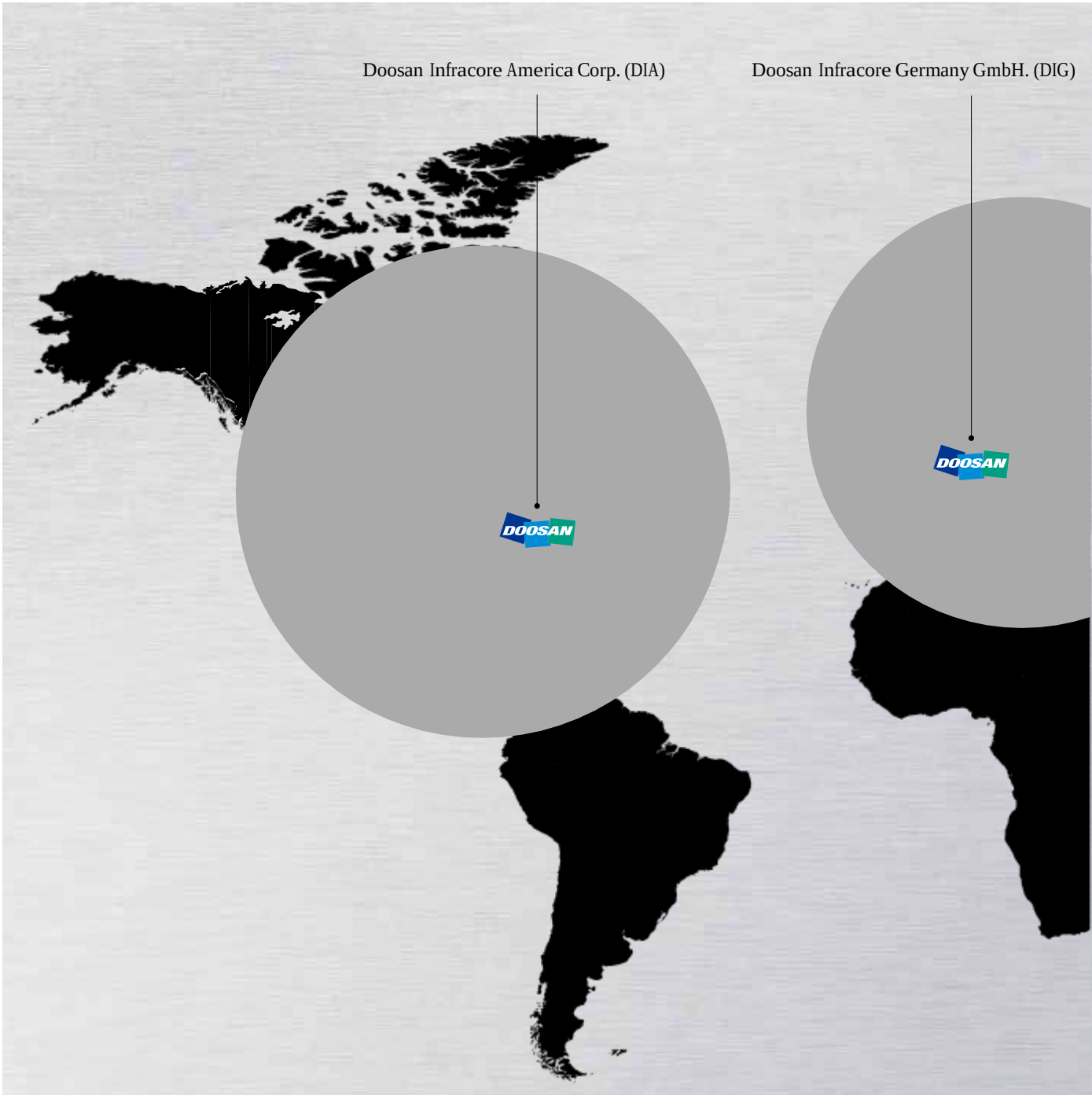
NC Unit Specifications

≅ Standard ≉ Optional X N/A

FANUC 31i

Item		Spec.	FANUC 31i
Axes Control	Additional controlled axes	5 axes in total	≉
	Least command increment	0.001 mm / 0.0001"	≅
	Least input increment	0.001 mm / 0.0001"	≅
	Interpolation type pitch error compensation		≉
Interpolation & Feed Function	2nd reference point return	G30	≅
	3rd / 4th reference return		≉
	Inverse time feed		≉
	Cylinderical interpolation	G07.1	≉
	Helical interpolation B	Only Fanuc 30i	-
	Smooth interpolation		≉
	NURBS interpolation		≉
	Involute interpolation		≉
	Helical involute interpolation		≉
	Bell-type acceleration/deceleration before look ahead interpolation		≉
	Smooth backlash compensation		≅
	Automatic corner override	G62	≉
	Manual handle feed rate	x1, x10, x100 (per pulse)	≅
	Handle interruption		≅
	Manual handle retrace		≉
	Manual handle feed 2/3 unit		≅
	Nano smoothing	AI contour control II is required.	≉
	AICC II	200 BLOCK	≅
	AICC II	400 BLOCK	≉
	High-speed processing	600 BLOCK	X
	Look-ahead blocks expansion	1000 BLOCK	≉
	DSQ I	AICC II (200block) + Machining condition selection function	≅
	DSQ II	AICC II (200block) + Machining condition selection function + Data server (1GB)	≉
	DSQ III	AICC II with high speed processing (600block) + Machining condition selection function + Data server (1GB)	≉
Spindle & M-code Function	M- code function		≅
	Retraction for rigid tapping		≅
	Rigid tapping	G84, G74	≅
Tool Function	Number of tool offsets	64 ea	≅
	Number of tool offsets	99 / 200 / 400 / 499 / 999 / 2000 ea	≉
	Tool nose radius compensation	G40, G41, G42	≅
	Tool length compensation	G43, G44, G49	≅
	Tool life management		≅
	Addition of tool pairs for tool life management		≉
	Tool offset	G45 - G48	≉
Programming & Editing Function	Custom macro		≅
	Macro executor		≅
	Part program storage	256KB(640m)	≅
	Part program storage	512KB(1,280m) / 1MB(2,560m) / 2MB(5,120m) / 4MB(1,0240m), 8MB(2,0480m)	≉
	Inch/metric conversion	G20 / G21	≅
	Number of Registered programs	500 ea	≅
	Number of Registered programs	1000 / 4000 ea	≉
	Optional block skip	9 BLOCK	≉
	Playback function		≉
	Addition of workpiece coordinate system	G54.1 P1 - 48 (48 pairs)	48 pairs
	Addition of workpiece coordinate system	G54.1 P1 - 300 (300 pairs)	≉
OTHERS FUNCTIONS (Operation, setting & Display, etc)	Embeded Ethernet		≅
	USB memory interface	Only Data Read & Write	≅
	High speed skip function		≉
	Polar coordinate command	G15 / G16	≉
	Polar coordinate interpolation	G12.1 / G13.1	≉
	Programmable mirror image	G50.1 / G51.1	≉
	Scaling	G50, G51	≉
	Single direction positioning	G60	≉
	Pattern data input		≉
	Jerk control	AI contour control II is required.	≉
	Fast Data server with1GB PCMCIA card		≉
	Fast Ethernet		≉
	3-dimensional coordinate conversion		≉
	3-dimensional tool compensation		≉
	Figure copying	G72.1, G72.2	≉
	Machining time stamp function		≉
	EZ Guide I with 10.4" Color TFT	Doosan infracore Conversational Programming Solution -.When the EZ Guide i is used, the Dynamic graphic display cannot application	≉
	Dynamic graphic display (with 10.4" Color TFT LCD)	Machining profile drawing. -.When the EZ Guide i is used, the Dynamic graphic display cannot application	≉
	3-dimensional tool compensation		OPT
	Figure copying	G72.1, G72.2	OPT
	Machining time stamp function		OPT
	EZ Guide I with 10.4" Color TFT	Doosan infracore Conversational Programming Solution -.When the EZ Guide i is used, the Dynamic graphic display cannot application	OPT
	Dynamic graphic display (with 10.4" Color TFT LCD)	Machining profile drawing. -.When the EZ Guide i is used, the Dynamic graphic display cannot application	OPT

Responding to Customers Anytime, Anywhere



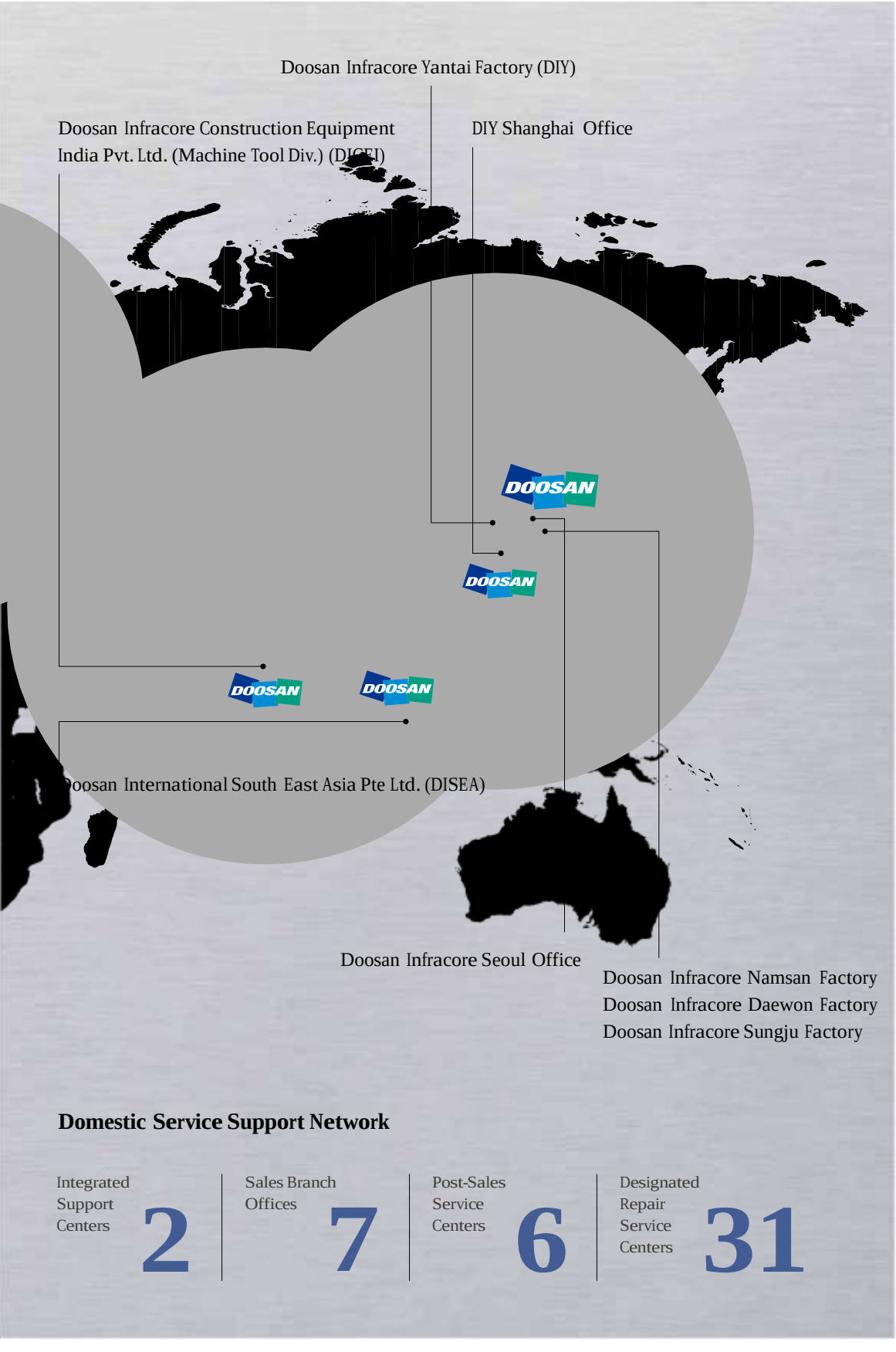
Global Service Support Network

Corporations	Dealer Networks	Technical Centers	Factories
5	128	21	4

Technical Center: Sales Support, Service Support, Parts Support

Doosan Machine Tools' Global Network, Responding to Customer's Needs nearby, Anytime, Anywhere

Doosan machine tools provides a system-based professional support service before and after the machine tool sale by responding quickly and efficiently to customers' demands. By supplying spare parts, product training, field service and technical support, we can provide top class support to our customers around the world.



Domestic Service Support Network

Integrated Support Centers	Sales Branch Offices	Post-Sales Service Centers	Designated Repair Service Centers
2	7	6	31

Customer Support Service

We help customers to achieve success by providing a variety of professional services from pre-sales consultancy to post-sales support.

Supplying Parts

- Supplying a wide range of original Doosan spare parts
- Parts repair service

Field Services

- On site service
- Machine installation and testing
- Scheduled preventive maintenance
- Machine repair

Technical Support

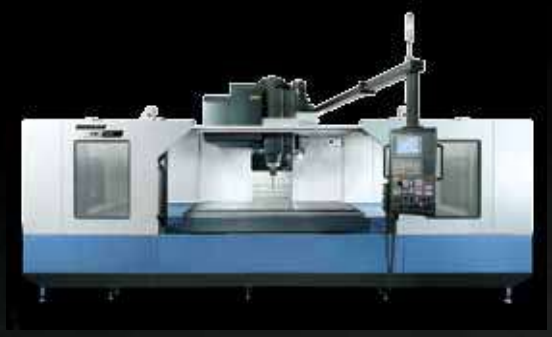
- Supports machining methods and technology
- Responds to technical queries
- Provides technical consultancy

Training

- Programming / machine setup and operation
- Electrical and mechanical maintenance
- Applications engineering

Major Specifications

VM series



Description		UNIT	VM 750	VM 750L	VM 960	VM 960L	VM 1260
Axes Travel Distance	X-axis	mm (inch)	1500 (59.1)	1800 (70.9)	2000 (78.7)	2400 (94.5)	2500 (98.4)
	Y-axis	mm (inch)	750 (29.5)		960 (37.8)		1260 (49.6)
	Z-axis	mm (inch)	800 (31.5)				900 (35.4)
Table Size (X x Y)		mm (inch)	1600 x 800 (900.0 x 31.5)	1900 x 800 (74.8 x 31.5)	2400 x 950 (94.5 x 40.0)	2600 x 950 (102.4 x 40.0)	2800 x 1260 (110.2 x 49.6)
Table Loading Capacity		kg (lb)	3000 (6613.8)	3500 (7716.1)	4000 (8818.4)	4500 (9920.7)	8000 (17636.7)
Max. Spindle Speed		r/min	6000 (8000, 10000)				
No. of Tool Storage		ea	30		30 {40}		40

DOOSAN

Doosan Machine Tools

http://www.doosanmachinetools.com

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Fax +65-6861-3459

↘ For more details, please contact Doosan.
↘ The specifications and information above-mentioned may be changed without prior notice.